RÉPUBLIQUE FRANÇAISE

MINISTÈRE DE L'INDUSTRIE

SERVICE
de la PROPRIÉTÉ INDUSTRIELLE

BREVET D'INVENTION

P.V. n° 2.188, Loire-Atlantique N° 1.470.421

Classification internationale : A 63 // b A 61 h

FRANCE 330
DIV.

Appareil de gymnastique complète et de kinésithérapie active.

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Demandé le 11 janvier 1966, à 10h 30m, à Nantes.
Délivré par arrêté du 16 janvier 1967.
(*Bulletin officiel de la Propriété industrielle*, n° 8 du 24 février 1967.)

(*Brevet d'invention dont la délivrance a été ajournée en exécution de l'article 11, § 7, de la loi du 5 juillet 1844 modifiée par la loi du 7 avril 1902.*)

272

La présente invention a pour but de réaliser un appareil de gymnastique complète et de kinésithérapie active, c'est-à-dire permettant, par des mouvements appropriés de l'utilisateur de faire travailler toutes les articulations et groupes musculaires de son corps.

L'invention pourra de toute façon être bien comprise à l'aide de la description qui suit, ainsi que des dessins ci-annexés, lesquels, description et dessins, sont, bien entendu, donnés à titre indicatif et à ce titre seulement.

Une réalisation possible, selon l'invention, est représentée par les dessins ci-joints, dans lesquels :

La figure 1 représente la vue en élévation de l'appareil ;

La figure 2 représente la vue par dessus, du dessus ;

La figure 3 représente la vue de droite.

L'appareil se compose essentiellement d'un châssis ou mieux d'un berceau, formé par exemple de tubes creux ou de profilés 1, 2, 3, soudés entre eux, ou reliés de toute autre façon, dont la rigidité est réalisée grâce à des entretoises 4, et des montants 5, les jambes de force 3, peuvent être inclinées pour donner une plus grande assise.

La partie inférieure du berceau repose sur le sol.

La partie supérieure peut être horizontale ou mieux être inclinée.

A la tête de l'appareil est fixé transversalement un coussin assez dur 6.

Au centre se trouve un autre coussin transversal 7, reposant par l'intermédiaire de petites roulettes 8, sur des rails 9, fixés le long des fers supérieurs 2, la course de ce coussin 7, est limitée à la partie supérieure par le coussin 6, et à la partie inférieure par une butée 10.

Un repose-pieds 11, portant des sangles 12, pour y fixer les pieds, peut pivoter autour de l'axe 13.

Sur les montants avant, comme sur les montants arrière 3, sont accrochés en 14, et 15, des sandows 16 et 17.

Pour se servir de l'appareil, il suffit de s'asseoir sur le coussin 7, placé à une distance convenable, de placer les pieds sur le repose-pieds, de les fixer grâce aux sangles, de saisir les sandows soit avant, soit arrière, et d'effectuer tous les mouvements possibles recommandés par le kinésithérapeute.

Un coussin intermédiaire 18, peut se loger entre les coussins 6, et 7, et permet ainsi la position allongée pour certains mouvements.

Un pédalier, non représenté ici, peut être ajouté pour permettre le mouvement des jambes.

Cet appareil permet :

1° D'être utilisé à la fois pour l'extension et la flexion du tronc et de tous les segments des membres inférieurs et supérieurs ;

2° De faire travailler : *a.* Les muscles extenseurs et fléchisseurs du tronc (dorsaux et abdominaux) ;

b. Les muscles de la ceinture scapulaire, des bras, des avant-bras, des mains ;

c. Les muscles du bassin, des cuisses, des jambes, des pieds.

Cet appareil, objet de la présente invention, permet en particulier :

1° La rééducation des paralysés, des traumatisés, des rhumatisants, etc. ;

2° La lutte contre l'obésité, les raideurs articulaires, les déficiences musculaires à titre préventif et curatif, et d'une façon générale l'entretien en bonne forme physique ;

3° L'entraînement sportif et la préparation aux compétitions, etc. ;

Comme il va de soi, et comme il ressort déjà de ce qui précède, l'invention ne se limite aucunement aux modes de réalisation de ses différentes parties spécialement indiquées, mais elle embrasse au contraire toutes les variantes possibles en particulier pour la forme, les dimensions, les dispositions des différentes parties les unes par rapport aux autres, ainsi que pour la matière qui les constitue. C'est ainsi que :

Prix du fascicule : 2 francs

1° L'inclinaison de la table peut être quelconque et peut être prévue réglable;

2° On peut prévoir différents réglages pour le positionnement des sandows, les butées de réglage, le repose-pieds, etc.,

3° Le nombre des extenseurs peut varier ainsi que leur longueur, leur résistance et leur point d'attache.

L'appareil, objet de la présente invention présente de nombreux avantages, entre autres :

1° Il permet à l'utilisateur de rendre mobile ses membres inférieurs et supérieurs, soit ensemble, soit séparément ;

2° Il est simple, robuste et pratique ;

3° Il est peu encombrant et se tient debout sur sa partie avant.

RÉSUMÉ

1° La présente invention a pour but de réaliser un appareil de gymnastique complète et active permettant, par des mouvements appropriés de l'utilisateur de faire travailler toutes les articulations et tous les groupes musculaires de son corps ;

2° L'appareil se compose essentiellement d'un châssis dont la partie inférieure repose sur le sol et dont la partie supérieure légèrement inclinée porte : des coussins l'un fixe, l'autre mobile sur des roulettes, un repose-pieds pivotant et des sandows ;

3° L'utilisateur placé sur le ou les coussins peut effectuer, avec ou sans les sandows, tous les mouvements recommandés par le kinésithérapeute pour faire travailler à l'extension et à la flexion les muscles et articulations de son corps ;

4° L'appareil est réglable, simple, robuste, pratique et peu encombrant.

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Par procuration :

Henri FURST

1967

L-196702

N° 1.470.421 M. Mauger 2 planches. - Pl. I

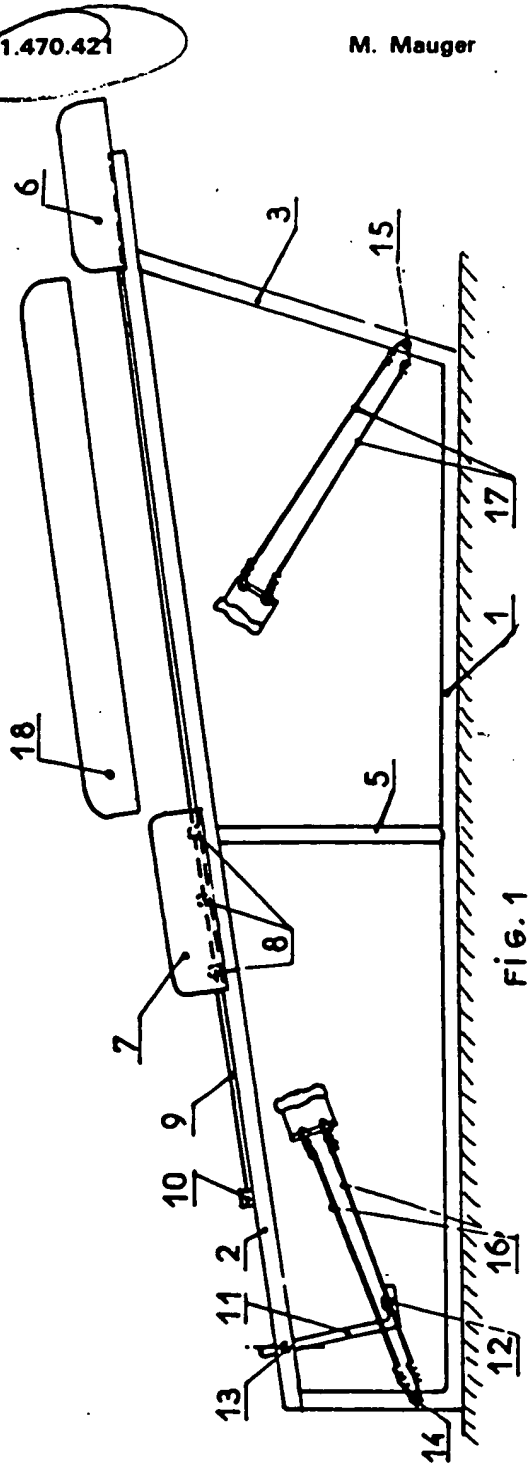

FIG. 1

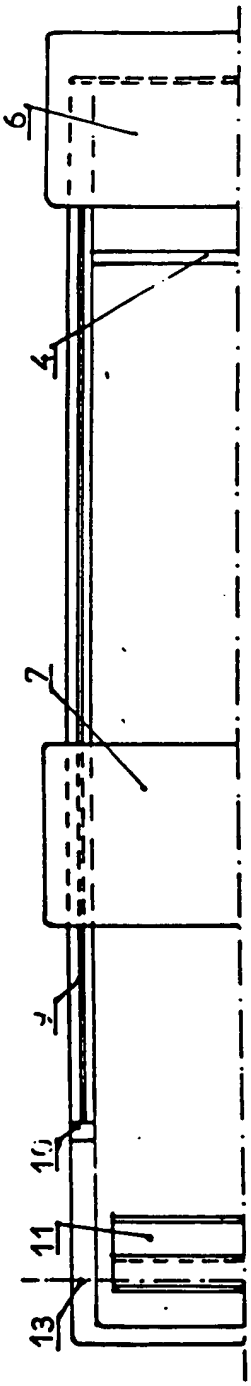

FIG. 2

482/142

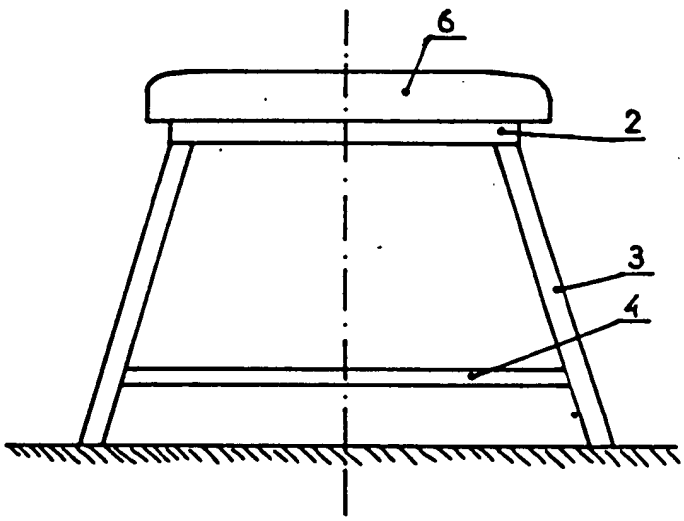

FIG. 3

PATENT

P.V. No. 2.188 Loire-Atlantique No. 1.470.421
International Classification: A 63 // b A 61 h

Complete and active gymnastic and physiotherapeutic apparatus

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[Patent] requested January 11, 1966 at 10:30 am, in Nantes
Issued January 16, 1967

The aim of the present invention is to realize a complete and active gymnastic and physiotherapeutic apparatus, that is, to allow the user by appropriate movements to work all the joints and muscle groups of the body.

The invention could in any case be easily understood with the help of the description which follows, as well as by some drawings attached hereto, which, description and drawings, are of course given for information purposes only.

A realization is possible, according to the invention, as shown by the attached drawings, in which:

Fig. 1 represents the view in elevation of the apparatus;
Fig. 2 represents the view from above, of the upper part;
Fig. 3 represents the normal view.

The apparatus is essentially composed of a chassis, or rather a cradle, formed for example by bent or shaped tubes 1, 2, 3, soldered together or fastened by any other means, whose firmness is realized thanks to crossbars 4 and uprights 5, the strengthening legs 3, and can be inclined to give a bigger seat.

The lower part of the cradle rests on the ground.

The upper part can be horizontal or, preferably, can be inclined.

At the head of the apparatus a fairly hard cushion 6 is attached crosswise.

At the center there is another transversal cushion 7, resting by means of small castors 8, on tracks 9, attached the length of the upper bars 2, the movement of this cushion 7 is limited to the upper part by cushion 6, and the lower part by a stop 10.

A footrest 11, with straps 12 to place the feet, can pivot around axle 13.

On the forward uprights, as on the rear uprights 3, stretch cords [sandows] 16 and 17 are hooked on 14, 15.

To use the apparatus it is sufficient to sit down on cushion 7, placed at a convenient distance, to place one's feet on the footrest, fasten them with the straps, grasp the stretch cords either in front or behind, and execute all the possible movements recommended by the physiotherapist.

A central cushion 18 can be placed between cushions 6 and 7 and thus permit a stretched position for certain movements.

Pedals, not represented, can be added to allow leg movement.

This apparatus allows:

1. Use at the same time for the extension of the trunk and of all segments of the lower and upper body parts.

2. Working:

   (a) the extensor and flexor trunk muscles (dorsal and abdominal);

   (b) the scapular waist muscles, the arms, the forearms, the hands.

   (c) The muscles of the pelvis, thighs, legs, feet.

This apparatus, subject of the present invention, allows in particular:

1. The rehabilitation of paralyzed, traumatized, arthritic persons, etc.

2. The fight against obesity, joint stiffening, muscular deficiencies on a preventive and curative basis, and in a general fashion good physical form maintenance.

3. Sports training and competition preparation, etc.

As stands to reason, and as already obvious from the preceding, the invention is in no way limited to the methods of realization of its different parts particularly indicated, but on the contrary encompasses all possible variations, particularly for shape, dimensions, arrangement of the different parts in relation to others, just as for the material of which they are composed. Thus:

1. The incline of the table can be at any point and can be adjusted in advance.

2. Different adjustments for positioning the stretch cords, the adjustment stops, the footrest, etc. can be made in advance.

3. The number of expanders can be varied, as well as their length, resistance, and their point of attachment.

The apparatus, subject of the present invention, presents numerous advantages, among others:

1. Allows the user to move his lower and upper body parts, together or separately.

2. It is simple, sturdy and practical.

3. It takes up little room and stands upright on its front part.

ABSTRACT OF THE INVENTION

1. The present invention has as its aim to realize a complete, active gymnastic apparatus allowing, by the user's appropriate movements, to work all the joints and all the muscle groups of tbhe body.

2. The apparatus essentially consists of a chassis, the lower part of which rests on the ground whose slightly inclined upper part carries: cushions, one attached and the other movable on castors, a pivoting footrest and some stretch cords.

3. Placed on one or more cushions, the user can perform with or without the stretch cords all the movements recommended by the physiotherapist to work on the extension and flexing of the muscles and body joints.

4. The apparatus is adjustable, simple, sturdy, practical, and easily stored.

Publication No. 2 625 907
National Registration No. 88 13336
International Class. A 63 B 17/04.21/28

PATENT APPLICATION

Filing date: October 11, 1988
Priority: MA January 20, 1988
No. 21 401/1988

Applicant: ANDRE Jacques - MA

Inventor: Jacques André

Date application made public [issued]
BOP "Brevets" No. 29, of July 21, 1989

Reference to other connected national documents: -----

Agent: Office of Claude Rodhain

Modular muscle development equipment

The invention concerns muscle development equipment consisting of at least an apparatus 1 itself comprising at least one flat plate 10 with two opposite sides and two stringers 11, to which this plate is attached in the area of these sides.

According to the invention, the rectilinear stringers comprise, arranged opposite on the two stringers and distributed along their length, interlocking means 110, 112 adapted to cooperate with detachable interlocking axles intended to interlock in a detachable manner said apparatus 1 and at least one other element 18, 13, 14, so that the said equipment may be transformable into a more complete piece of equipment by the addition of said other element.

This equipment is thus adapted to a modular form of construction and to commercialization and utilization, be it by separate elements or by a set consisting of complete training equipment.

"Modular muscle development equipment"

The invention concerns muscle development equipment presented in a modular form, and from this fact capable of being commercialized by separate elements, these elements being interlockable to constitute equipment, but with certain of them being able to be used separately or in configurations in which they consist of more basic equipment.

More precisely, the basic element of this equipment comprises a plate and two stringers to which this plate is interlocked in the area of facing sides.

Equipment of this type is already known, and the most classic is known by the name of "abdominal board". The range of muscle-building exercises which it is possible to perform with an abdominal board is limited, and as indicated by the name of this apparatus, this range of exercises is centered essentially on the work of the abdominal muscles. When the user wishes to work another group of muscles, he must acquire another apparatus, and this apparatus sometimes consists of one or more elements very similar to an abdominal board, in some details close, and in any case including a plate interlocked with two stringers in the area of facing sides. An excess of cost and a loss of storage space results from this redundance of elements.

The invention has as its aim to remedy these inconveniences and to create equipment which it is possible to acquire by separate elements to cut the cost involved, or not to equip oneself with superfluous apparatus, which assembles and disassembles quickly and easily, which allows several persons to work out simultaneously, and which is sturdy and reliable.

To this effect, the invention concerns muscle development equipment consisting of at least an apparatus itself comprising at least a flat plate with two opposite sides and two stringers to which this plate is interlocked in the area of these sides, equipment characterized in that the stringers comprise, arranged opposite on the two stringers and distributed along their length, interlocking means adapted to cooperate with detachable interlocking axles intended to interlock in a detachable manner the said apparatus and at least one other element, so that the said equipment may be transformable into more complete equipment by the addition of said other element.

Other characteristics and advantages of the invention will emerge from the following description concerning a preferred form of realization of the invention, given by way of a non-limiting example, and represented by the attached drawings, in which:

Figure 1 is a schematic view in perspective of a form of realization of an apparatus according to the invention,

Figure 2 is a schematic view from the side of the apparatus in Fig. 1, without toe clips, and Figures 2A and 2B show in perspective some of the other accessories capable of being interlocked with this equipment,

Figure 3 is a longitudinal schematic view of a sandow[1] [stretch cord] support equipping the apparatus of Fig. 1, and Fig. 3A shows in transversal section a method of mounting a stretch cord around this stretch cord support,

Figure 4 is a longitudinal schematic section of a pulley holder equipping the apparatus of Fig. 1,

Figure 5 is a schematic view from above of a part of the apparatus of Fig. 1 without stretch cord holders or stretch cords,

Figure 6 is a schematic side view of an end area of the apparatus of Fig. 1, with some acccessories,

Figure 7 is a longitudinal view of a toe clip bar equipping the apparatus of Fig. 1, and Figs. 7A and 7B show some of the controls equipping this bar,

Figure 8 is a view in perspective of the toe clip whose bar is shown in Fig. 7,

Figure 9 is a longitudinal view of a push bar equipping an apparatus according to the invention,

Figure 10 shows cables intended to be adapted to the push bar of Fig. 9,

Figure 11 is a view in perspective showing the mounting of the push bar and its cables respectively of Figs. 9 and 10,

Figure 12 is a view showing the bar and the cables of Figs. 9 and 10 when mounted,

Figure 13 is a schematic side view of a part of the apparatus of Fig. 1 showing the adaptation of the bar and cables of Figs. 9 and 10,

Figure 14 is a schematic side view of the apparatus of Fig. 1 in inverse position on which a carriage is mounted,

Figure 15 is a schematic view from beneath the carriage of Fig. 14 showing the mounting of a wheel on a long axle,

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[1] "Sandow" will be referred to as "stretch cord" from now on.

Figures 16 and 17 are schematic front views of the carriage in Fig. 14 respectively when the large axle is removed and when it is present,

Figure 18 is a schematic side view of a part of the apparatus of Fig. 1 in reverse position on which is mounted a carriage, with some of its accessories, and Figs. 18A, 18B, 18C and 18D show in perspective the detail of these accessories, namely a stop, a shoulder strap holder, a stretch cord holder and a footrest,

Figure 19 is a schematic view in perspective of a form of realization of another apparatus according to the invention, with some of its accessories, and Figs. 19A, 19B, 19C, 19D, 19E show in perspective the details of these accessories, namely a support plate, an interlocking axle, a protective cylinder, a detachable bar, and a handle holder,

Figures 20 to 22 show schematically progressive folding positions of the equipment in Fig. 19,

Fig. 23 shows schematically complex equipment according to the invention in the folded position,

Figure 24 shows schematically in perspective some accessories which can be used with the equipment of Fig. 19,

Figure 25 shows schematically in perspective the mounting of some accessories, on parts of the apparatus of Fig. 19,

Figure 26 is a side view of the apparatus of Fig. 19, furnished with some of its accessories and an apparatus according to Fig. 1 inclined in the reverse position and itself furnished with the carriage,

Figure 14 and Figs. 26A and 26B[2] show details of controls of the apparatus of Fig. 26,

Figure 27 is a schematic view in perspective of the apparatus of Fig. 19 furnished with some of its accessories and an apparatus according to Fig. 1, horizontal in reverse position and itself furnished with the carriage of Fig. 14,

Figure 28 is a schematic side view of a stand intended for the apparatus according to the invention,

Figure 29 is a schematic side view showing one possibility of mounting the stand of Fig. 28 on the apparatus of Fig. 1,

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[2] Figs. 26A and 26B appear to be missing.

Figure 30 is a schematic front view showing the mounting of an anti-derailment device on the apparatus of Fig. 14,

Figure 31 is a schematic view in perspective of one of the pieces of the anti-derailment device of Fig. 30, and

Figures 32 to 48 show exercises which it is possible to execute by means of various equipment according to the invention.

The muscle development equipment shown in detail on Figs. 1 and 2 comprise essentially an apparatus 1, well adapted to consist of a basic apparatus included in the composition of various other equipment according to the invention, the most basic to the most complete, furnished with some of its accessories.

This basic apparatus 1, in its minimal configuration, is an abdominal board consisting of a flat plate 10 and two rectilinear stringers; the two stringers 11 are sections presenting a T-section, which contributes to give the abdominal board a reversability whose nature will be explained later, in aluminum or in light alloy, or in stainless steel, or similar; the plate 10, in rectangular form, is in wood, or plastic material or similar, and its support surface for the user can be furnished with padding; the opposite longitudinal sides of the plate are attached to the horizontal wings of the T-section, which are furnished with means 110, here holes, for the attachment of the plate and the detachable interlocking of accessories thanks to which the abdominal board thus constituted, according to the invention, can be transformed into basic apparatus or more complete equipment, as well as other elements, such as apparatus to constitute truly varied equipment; the attachment (for example by screws 100) of the plate 10 on the stringers 11 can equally be detachable in such a way that this might be arranged in the most appropriate manner. According to the invention, the basic apparatus 1 comprises likewise interlocking means for it with at least one other element (accessory(ies) and/or apparatus) in the form of holes 111 and notches 112 provided in the vertical wings of the T-section, which are intended to cooperate with corresponding interlocking means, here axles, of other elements. The holes 110, 111 and the notches 112 are arranged opposite two by two, the holes being distributed regularly the length of the stringers, so that the arrangement of the complementary elements might be modified in view of the difficulty of the desired exercise or the morphology of the user.

Among the accessories intended to be interlocked with the stringers 11, two pulley holders are provided, whose role will be mentioned later, in proximity to their ends; taking into account the relatively considerable diameter of the pulleys, the horizontal wing of the stringers can be furnished with a release indentation 113 above the interlocking holes intended for the

passage of the axles of these pulley holders. The notches 112, provided even closer to the ends of the stringers, extend from the free end of the vertical wing for those on one side, and for the other, from the horizontal wing of the stringers, which likewise contributes to confer a reversability to the apparatus whose relevance will be better understood by what follows; they are intended to receive interlocking axles to an L-shaped support consisting of another element (and more precisely another apparatus) of the equipment, which will also be described later. The plate 10 itself has two interlocking holes 101 to the L-shaped support in the proximity of one of its longitudinal sides, intended to receive the axles of interlocking screws in an arrangement which will likewise be described later.

This abdominal board according to the invention is intended to be used, insofar as basic equipment, notably when stretch cords 12, known commercially under the name "sandows" are added to it.

These stretch cords (only sketched in Fig. 1, only one of them being wholly shown) are attached to a stretch cord holder 13 and more precisely (see Fig. 3) to a tube support 130 extending between the stringers and in which a detachable interlocking axle 131 is inserted intended to traverse two interlocking holes 111 running opposite the vertical wing of the stringers; on one side, this interlocking axle is furnished with a head 132 and on the other with a groove for the passage of a hook 133, arranged on all sides of the stringers 11, with a view to avoiding the uninterlocking of the stretch cord tube support and the stringers; according to a variation not shown, the tube can be centered on the axle by means of nylon collars arranged at its extremities. Around the interlocking tube the stretch cords form a buckle held by a tightening cable 134 (Fig. 3A); for example, two sets of stretch cords can be interlocked with the same abdominal board by means of two stretch cord holders 13 respectively interlocked at some distance from the ends of the stringers; the placement of the stretch cord holders can be modified to function with the length of the stretch cords used, which can be very long and are in this hypothesis guided by the pulleys of pulley holder 14 already mentioned (Figs. 1 and 4); in these conditions the stretch cords which are hooked to a stretch cord holder 13 close to one of the ends of the apparatus are guided by the pulley grooves placed on pulley holder 14 close to the opposite end. The attachment of the stretch cords can likewise be made directly on the interlocking axle 131, in the absence of tube support 130, by means of snaphooks, hooks, or similar.

An anti-derailment bar 15, rounded on the side of the stretch cords, is interlocked for example in the same manner as already described for the stretch cord holders, in immediate proximity to the pulley holders on the side of the corresponding

end of the stringers, to stop the stretch cords from coming out of their groove (Fig. 5); the length of the stretch cord exceeding the pulley holder 14 and the anti-derailment bar 15 can likewise be regulated by moving the stretch cord holder; the free end of each stretch cord 12 is furnished with a connecting snaphook or another control 120 with a quick attachment (hook closed by a spring valve, for example), to a handle 16, one single handle being connected to a set of stretch cords, in such a way that one could place into action simultaneously several stretch cords of the same resistance or of different resistances, to be able to exert a whole range of stress; it is likewise possible to connect two handles to different stretch cords of a same set, to work both arms, simultaneously or alternately; a dynamometer equippped with a collar control (not shown) allows testing the stretch cords and to calculate the effort produced; a graph indicating the force produced in the function of lengthening each type of stretch cord can thus be established and furnished with the basic equipment and likewise separately.

The pulley holders 14 also consist (Fig. 4) of a rigid tube 140 extending between the stringers 11 and mounted by means of collars or bearings 141 allowing its rotation, around an interlocking axle 142 crossing interlocking holes 111 of these stringers; the pulleys 143 are themselves loosely mounted around tube 140 to avoid wearing the stretch cords, and are separated by collars 144; in order not to overload the drawing, Fig. 4 only shows three of the pulleys which extend the length of tube 140; in addition collars 144 are inserted between the end pulleys and the stringers; axle 142 comprises a head 145 on one side, and on the other a threaded part intended to receive a wing nut 146, with a view to its interlocking with the stringers.

The handles 16 (Fig. 2A) consist of a curved tube 161, covered with a view to increasing comfort and grip safety, sufficiently long to be able to be grasped with two hands, and comprising a central groove 162 whose role will be specified later, and by a rectilinear shank 163 carried by this curved tube at its opposite ends and furnished at regular intervals with separating collars 164 between which are hooked the connecting controls 120 such as snaphooks.

The handles 16 are intended to be hooked to stretch cords 12 carried either by stretch cord holders 13, or by spreaders 17 (Fig. 2B) in a resistant U-shaped tube attached at the desired distance on all sides of the plate 10, by separating their stems 170, whose ends are furnished with interlocking axles 171 intended to enter the holes 111 of the vertical wing of the stringers and comprising stops 172 which can be detachable. The central part 173 of the spreaders 17 (transversal bar of the U) allows attachment of the number of stretch cords chosen, those coming from stretch cord holders 13 as well as those hooked to handle 16 (Fig. 6). Like the shafts 163 of the handles, the

transversal bars 173 of the spreaders are furnished with separation collars.

Another usable accessory is an adjustable toe clip (Fig. 7, 7A, 7B, 8) consisting of a support bar 180 in a generally cylindrical form in wood or metal able to be arranged on any side across the apparatus and adapted to receive an adjustable strap 181. This toe clip 18 is furnished, the length of a generating cylinder, with two staples 182 spaced the same distance as the separation of the horizontal wings of the stringers 11 and intended to be mounted overlapping on all sides of these wings; the toe clip is furnished with two diametral holes of the same separation as holes 110 of the horizontal wings to receive a vertical pin 183 crossing them as well as these holes 110 of the stringers and consisting of a detachable interlocking axle of the toe clip to these stringers; the part of the toe clip opposite the stringers is furnished with an oblong plate 184, with an oblong aperture 185, and with a recess 186 likewise oblong perpendicular, while the pin 183 comprises a flat area 187 which bulges sideways, intended to rest on recess 186 in the unlocking position of the toe clip and to enter the oblong aperture 185 in the locking position in such a way that the shank of the pin enters hole 110 corresponding to the stringer only in the second case; thus it is sufficent to lightly extract the pins 183 and turn them a quarter turn to be able to move the toe piece; with a view to avoiding lost pins, these are furnished with a head in the form of a ring through which an elastic bracelet is passed, otherwise threaded around the bar 180 of the toe clip. The strap 181, furnished with a self-stopping adjusting buckle intended to reclose it, is threaded through eyelets 189 on all sides of the toe clip bar, then, from each eyelet it goes successively on the closest stringer of a first side of the bar, then between the stringers, and lastly repasses under the same stringer, to reemerge, always on the same side of the bar, on the outside of the stringer, and, after being passed underneath the bar of its other side, this time goes over the stringers from their exterior.

A pushing device (Figs. 9 to 13) comprising a push bar 190 furnished at each end with two rollers determining a groove between them, cooperates with the handles 16 by means of two flexible very resistant cables 191 with a view to allowing the production of maximum effort; for this purpose, knots 192 are spaced on the flexible cables in a manner which allows the "forced" attachment of the cables onto the bar 190 at the desired length, the lower part of the cable having beforehand been attached on the groove 162 of the handle by a running knot 193. Uprights 194, composed of a vertical shank furnished with transversal small bars inclined toward the top where one moves away from the shank, on which can be placed the push bar, facilitate working with the bar and the fine adjustment of the attachment height of the cable.

With the accessories which have just been described, the abdominal board according to the invention constitutes basic equipment which already allows a great variety of exercises with stretch cords to be performed.

In addition, according to an advantageous characteristic of the invention, as has already been mentioned, this abdominal board 1 is reversible; more precisely, when it is turned upside down it can be associated with a movable carriage, thus constituting a "press" 2 (partially shown in Fig. 14) usable in an independent way as a horizontal press, allowing, for example, in the arrangement in Fig. 18, a workout in various positions (seated, lying down, on the stomach or on the back) as much for the muscles of the upper body as for the legs. For certain of these exercises, short stretch cords can be hooked on one side to a stretch cord holder and on the other to the carriage, while the user's effort resting on the carriage is exerted on meeting the resisting effort of the stretch cords, between a footrest interlocked with the stringers and shoulder straps interlocked with the carriage against which his shoulders are supported; of course, other exercises can be envisaged, some not calling upon all the elements mentioned above, even without stretch cords.

To this end, the carriage 20 comprises a plate 200 having padding of a foam material and serving as a support surface for the user, mounted on wheels 201 with grooves arranged under this plate and intended to be guided by the vertical wings of the T-stringers 11 of the abdominal board, which thus constitute tracks for the grooves of the wheels 201. So that the user is warned that he risks coming out of these tracks when the carriage reaches the proximity of the end of stringers 11, the stringers comprise a notch 114 in the vertical wing of the T, which causes a light jolt on the passage of the carriage. The wheels 201 are mounted on axles 202 (or also half-axles) carried by longitudinal plates 203 belonging to protection caches 204. At least one other pair of wheels 205 carried by a supplemental axle 206, with a wider separation than the former (greater than the width of the support plate 200) allow a better seat in conditions which will now be described: wheels 205 and supplemental axle 206 are detachable, the axle of at least one of the wheels 205 being attached to axle 206 by an attachment control 207 such as a hook or a pin. The supplemental axle 206 is likewise carried by longitudinal plates 203, for example in front of the carriage 20, but it is likewise possible to provide an axle and a pair of wheels behind. As a variant, the mounting of the wheels on the axles can be obtained by providing threaded axle ends and a wheel attachment by milled nut, with interposition of crossbars between the wheels and the longitudinal plates 203. In order to limit the course of the carriage 20 on the stringers 11 to a chosen range, one (or several) stop(s) 21 can be mounted on the stringers 11. With a view to cooperating with stops 21, at the end of the carriage, two buffers 208 are provided, each

consisting of a flexible block carried by a fixed or telescopic support. The stretch cords are hooked to one of the axles; the buffers can likewise be mounted on the stop itself.

Each stop 21 consists (Figs. 14, 18 and 18A) of an inverse U-shaped plate 210 intended to be mounted overlapping on the vertical wing of stringers 11 of the abdominal board, itself reverse mounted, one of whose vertical stems carries an interlocking axle 211 provided to be introduced into the interlocking hole 111 chosen by this vertical wing, and whose top carries a barrel 212 in the interior of which is mounted telescopically, by means of a helicoidal spring, a buffer 213 to deaden the impact of the flexible block of buffer 208 of carriage 20. The interlocking axle 211 being mounted, in its reverse U-shaped stem, in a location arranged in proximity to the area where the carriage 20 moves, the stop is interlocked in an overhang on its track, and its own weight thus holds it in position upon it; moreover, thus, the impacts of the carriage cannot make it rock.

The removable shoulder strap holder 22 (Fig. 18B), intended to support the user's shoulders, is adaptable on carriage 20. This shoulder strap holder consists of a base plate 220 supporting two axles 221 covered with foam cylinders 222, planned to deaden contact with the user's shoulders, against which a great force is exerted; on all sides of the base plate 220 two wings 223 extend, each furnished with a lug 224, the two lugs 224 being opposite, one facing the other; these two lugs 224 are intended to be inserted against the longitudinal plates 203 of the carriage, in a way to be wedged by these plates 203 and the cache 204, so that the base plate 220 of the shoulder strap holder, thanks to its own weight and to its overhang, comes to bear on the upper edge of the longitudinal plates 203 of the carriage and is thus supported by them. The shoulder strap holder comprises likewise a headrest 225[3] in the form of a semi-elliptical plate, preferably padded.

As the movable carriage 20 is intended to be hooked to stretch cords, it can be used with a stretch cord holder 13 already described, or again a specific stretch cord holder 23 (Fig. 18C) similar to the former regarding the attachment of the stretch cords, but furnished with two longitudinal parallel shafts intended to be encased around the stringers frames 11 at their extremity, and whose far ends come to a stop against the ends of the stringers.

The footrest 24 (Fig. 18D) is approximately in the form of a bench. Thus, this footrest comprises two parallell vertical wings 240 connected to their upper part by a horizontal plate 241

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[3] Believe not shown.

serving to support the user's feet (more precisely the back of the heels) and to which is attached a backpiece 242 forming a slightly obtuse dihedral angle intended to support the sole of the user's feet; with a view to measuring the force exerted by the user on this backpiece during the course of his exercises, scales of a type similar to a "weighing machine" can be arranged on the footrest, its base against backpiece 242, under condition of an appropriate range of measurements (greater values than a classic weighing machine). In view of its interlocking with the stringers, the footrest is furnished, projecting horizontally with respect to its vertical wings 240, with two axles 243 intended to enter the chosen holes 111 of stringers 11; these two axles 243 being on the user's side, the footrest, under its own weight, is in support on the stringers, and this support is again reinforced by the user's effort. One of the two parallel vertical wings 240 of the footrest, comprising an interlocking axle 243 on its exterior surface, likewise comprises on the same surface a retaining tab 244 against the outside surface of the stringer which this axle 243 enters.

Another element to which the abdominal board is adapted to cooperate is an apparatus consisting of an L-shaped support (Fig. 19).

The L-shaped support consists principally of a ladder 30, two stringers 31 which are articulated at one end of this ladder by a transversal pivot bar 32 soldered to the ladder 30, and two abutments 33 connecting stringers consisting of the uprights 300 of the ladder to two stringers 31. The uprights 300 of the ladder, as well as the stringers 31 and the abutments 33, consist of T-shapes such as the stringers 11 of the basic apparatus, and like them, they are furnished with interlocking means adapted to cooperate with interlocking axles intended to interlock the L-shaped support and various other elements, in the form of holes 301, 30, 311, 330, distributed by pairs the length of the vertical wings of the shapes. The spacing of the uprights 300 of the ladder 30 is slightly greater than that of stringers 11 of the abdominal board (so that these might be hooked to the ladder) and less than that of stringers 11 of the L-shaped support. Outside bar 32, uprights 300 of the ladder are crossbraced by rungs 302 (few in number and detachable in an economical version not shown) and uprights 300 like the stringers 31 are likewise united by support plates 303, 304, 312, 313; certain plates 303, 304, 313 are attached by screws under the areas of the ends of the horizontal wings of the shapes, which horizontal wings are likewise furnished with interlocking holes, while plate 312 is soldered to pivot bar 32. An accessory support plate 315 (Fig. 19A) is likewise provided, able to slide the length of the vertical sides of the stringers 31, rubber bands in contact with the stringers interlocking the whole thanks to the user's weight; this support plate 315 is furnished with two apertures for the passage and propping of the ends of stringers 11 of the abdominal

board when this is interlocked for certain exercises to this L-shaped support by being inclined and supported at its opposite ends by the ladder 30, as will be shown later; around apertures for the ends of the stringers of the abdominal board, hard rubber skids are arranged. Under the support plate some antiskid shoes are attached if necessary, while behind the support plate 304 of the base of the ladder, two removable castors 305 are also attached, furnished with a brake, mounted by means of screws and/or wing nuts; thanks to castors 305, the L-shaped support can be moved, opened or folded; on the upper part of this plate 304, retaining shoes 306 for the abdominal board against the ladder 30 by its stringers 11 are provided; this abdominal board being placed in a transversal position for certain exercises on the upper edge of plate 304, and its attachment being obtained by pinching the support plate 10 between the back of uprights 300 of the ladder and wing nuts cooperating with the interlocking screws inserted in holes 101 of plate 10 mentioned with reference to Fig. 1. The abutments 33 are interlocked in a detachable manner on one part of stringers 31 by flat parts realized at the ends of these abutments and flanges 316[4] in the form of fork joints, for example soldered, attached to the stringers, which flanges are furnished with interlocking holes for appropriate articulated interlocking axles; these abutments 33 are on the other hand interlocked with the uprights 300 by an axle 34 (Fig. 19B) held by a locking medium 340 such as a hook or a pin; the same device likewise allows the interlocking of one end of the abdominal board in the vertical position or of various accessories when axle 34 is threaded into holes 301 of flanges 307 of the uprights 300. The base of the abutments 33 can possibly be furnished with a footrest. The support plate 312 arranged in proximity to the pivot bar 32 is furnished with a slot parallel to this pivot bar, intended to immobilize the abdominal board according to the invention when it is hooked in the vertical position against the ladder 30, to its flanges 307.

A removable bar (Fig. 19D) is intended to be interlocked with stringers 31 or with abutments 33 with a view to hooking accessories or to serve as a support bar for certain exercises; in this latter case, it can likewise be furnished with the accessory already described consisting of a split foam protection cylinder 317; this detachable bar 35 is presented in the form of an axle having a telescopic structure with an exterior tube 350 in which is mounted in a sliding fashion an interior cylinder 351 under the charge of at least a helicoidal spring likewise lodged in the exterior tube; the opposite ends 352, 353 of the external tube and the internal cylinder 351 are split in a manner to induce on all sides of the split interlocking fingers intended to be engaged in the interlocking holes 311, 330 of stringers 31 and abutments 33.

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[4] Believe not shown.

A handle holder accessory 36 (Fig. 19E) is likewise provided interlockable with stringers 31 or abutments 33, with a view to serving as a triceps and abdominal stand. This handle holder is U-shaped, whose horizontal stem 360 is furnished with two wings 36 perpendicular to the U-plan, themselves in a reverse U and carrying interlocking axles 362 intended to be introduced into holes 310, 330 of the stringers or abutments; the vertical stems 363 of the U are tubular and furnished on one part with cushioning plaquettes and on the other with interlocking holes 364 for reverse L-shaped handles (referring still to Fig. 19E) whose vertical stem 365 is itself pierced with holes 366 at different levels to allow a depth adjustment acting in the position of interlocking axles 367 crossing holes 364, 366 placed with regard to the handle holder and handles; the gripping areas of the handles consist of the horizontal stems of the L, here reversed, covered with a supple material allowing a more comfortable grip. The reverse U-shaped wings of the handle holder allow the insertion between them of vertical wings of the T of the shapes, and a good balance of the handle holder, which this serves when the L-shaped support is arranged [on?][5] stringers 31 resting on the ground, or ladder 30 resting on the ground.

The L-shaped support structure which has just been described allows this support to be folded easily, for example to put it away or to transport it (moreover, thanks to its light weight and its detachable castors, it is easy to move it even in the open position). To fold the L-shaped support 3, it is sufficient to uninterlock the abutments 33 from the uprights 300 and to fold them against stringers (Fig. 20), then to fold stringers 31 again against the uprights 300 (Figs. 21 and 22). To transport the greater part of the equipment, the abdominal board can also be arranged against the L-shaped support 3, and the movable carriage 20 over the whole, held in place by one or more straps (Fig. 23).

This L-shaped support 3 allows a great variety of exercises, and some more accessories for this equipment extending the compass of these exercises will be described.

A support axle 37 for strap(s) 38 can be interlocked with the uprights 300 of the ladder 30 (Figs. 24 and 25); this axle is tubular at least at its ends and furnished with slots 370 into which are intended to be inserted the vertical wings of the T consisting of the uprights; it is intended to rest on a rung 302 of the ladder and the interlocking can be completed by hooks, pins or similar 371 crossing a hole 301 provided in the upright(s) 300 facing the tube orifice; the strap holder comprises in its center a loop 372 for the passage of one or more

[5] Word(s) appear to be missing.

straps with adjustable buckes, this strap holder resting on the chosen rung of the ladder 30.

With this strap holder axle 37 and the strap 38 is associated a traction bar 39 comprising a central part 390 furnished with a loop 391 for the passage of the strap and two grip ends 392 sewn at an obtuse angle relative to the central part 390; the gripping areas 392 can be covered with a supple material.

It is likewise possible to pass two straps 38 directy around strap holder axle 37 and to associate not the traction bar but a handle 16 already described, to each strap (Fig. 25).

The workout with the straps is normally done by using (Fig. 26) the movable carriage 20 mounted on the inclined abdominal board, reversed and interlocked with the L-shaped support by its notches 112 of its stringers 11, these notches 112 being placed overlapping on its interlocking axle consisting of a rung 302 of the ladder 30, while the opposite end of the stringers 11 of the abdominal board rest in the apertures of the support plate 315 (inclined press). The L-shaped support can likewise be used with the horizontal reversed abdominal board and movable carriage (Fig. 27), between the stringers 31, several stretch cords 12 being hooked for example to one part of a lower rung of the ladder and the other part to an axle of the carriage 20. In these conditions, the normal axles only can be used (this is the case in Fig. 27) or better the wide base, the carriage wheels then being guided by the stringers 31 of the L-shaped support, to obtain better stability.

The incline of the abdominal board, one end of which rests on a rung 302 of the ladder 30 can naturally be chosen by the user, and depends on the height of the rung serving as his support; the position to the ground along the stringers 31, of the support plate 315, is thus variable; the positions of the support plate corresponding to each rung can be located on the stringers, for example by numbering. At each torque height of the bar - user's weight, a given press corresponds; the value of this force can be given by a panel with a sliding runner, and this panel can be carried by one side of the support plate 303 which is found at the free end of the ladder 30. For example, the other side of this support plate can carry the curves of the press force on each usable stretch cord, functioning with its extension, which was examined earlier.

A folding stand 4 allows raising the base of the abdominal board if necessary when it must be used in the inclined plane; this stand, seen from the side, is in the form of an A, and presents on its upper part an interlocking spindle 40 with the notches 112 of the stringers 11 of the abdominal board, which thus rests on the stand; the horizontal stems 41 of the A carry

stops 42 to block the basic apparatus in certain particular positions; the stand 4 can be blocked in relation to the stringers against the toe clip 18 (Fig. 29)[6] and this can be arranged in the most appropriate area for the good execution of the chosen exercise; this stand is likewise furnished with a plate in a way to serve as a back for certain exercises (inclined press); it likewise serves for exercises to strengthen the arm muscles.

With a view to increasing the stability of the horizontal press (Fig. 18), it is possible to add an anti-derailment device 5 (Figs. 30 and 31). This device consists of a base 50 and two small blocking bars 51 interlocked by screw-nut systems, the base 50 comprising two stringers 52 hindering the rocking of the carriage. To this end, the base 50 consists of two U's arranged in parallel transversal planes in relation to stringers 11 of the abdominal board and whose vertical stems 52 are separated at a distance equal to the wide base of carriage 20; the upper parts of the vertical stems 53 arranged opposite the two U's are connected by the stringers 52, which are thus separated the same distance; the height of the vertical stems 53 of the U's is chosen in such a way that the wheels of the wide base of the carriage pass just under the stringers 52 when they are on their tracks consisting of the stringers 31 of the L-shaped support; thus, if the carriage has a tendency to rock sideways or lengthwise, which could lead to its wheels leaving their tracks, the rocking movement is limited and even hindered by the fact that the wheels come to bump against the stringers 52. The correct positioning of base 50 in relation to the abdominal board is obtained by the fact that this base is held against the board by the small blocking bars 51, pierced with a hole in their center, as are the horizontal stems 54 of the U's; thus, these horizontal stems 54 are arranged under the stringers 11 of the abdominal board, and the small bars 51 arranged above allow the horizontal wings of the stringers 11 to be pinched and are moreover immobilized in a lateral position between their vertical wings, by screwing milled head screws 55 into nuts 56, crossing the holes which are opposite in the horizontal stems 54 and the small blocking bars 51.

The different elements (apparatus and accessories) which have just been described allow the realization of a great number of independent equipment, from the most simple to the most complex, being able to be acquired by separate elements, the acquisition of a first piece of equipment able eventually to be completed by that of another.

One can thus for example (this list is not limiting) provide equipment consisting respectively of

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[6] Does not appear to be in Fig. 29.

- only the abdominal board according to the invention, with a view to later use with other accessories and/or apparatus,

- the abdominal board according to the invention, long stretch cords 12 and accessories such as stretch cord holders, pulley holders 14, anti-derailment bar 15, handle 16, spreader 17, toe clip 18, push bar 190, etc.,

- the abdominal board, short stretch cords 12, accessories and the carriage 20,

- only the L-shaped support 3 according to the invention,

- the L-shaped support 3 and accessories such as support plates 303, 304, 312, 313, handle holder 36, support bar 35, compact foam cylinder 37,

- the L-shaped support 3 and the abdominal board according to the invention,

- the L-support 3 and the abdominal board with accessories, for example,

- the L-shaped support 3, abdominal board, carriage 20 and accessories,

One can likewise plan the separate purchase of this equipment, for example,

- the carriage 20,

- certain accessories,

- folding stand 4,

- dynamometer,

- panels and graphics.

This formula allows the realization of progressive acquisition according to the means and needs of each user, of a tough material but staying light in spite of a possibility of very strong muscular effort (115 kg. per "arm" of the basic apparatus, 230 kg. for the horizontal press with a lengthening of the stretch cords by 50 cm.). It likewise allows a simultaneous workout for two or three persons according to the chosen option (2 persons for the exercises with one single "arm" for the equipment constituted by the basic apparatus with stretch cords; 3 persons for the equipment consisting of the L-shaped support and the abdominal board with stretch cords).

In addition, even the most complete equipment is very easy to transport, thanks to its detachable castors, not cumbersome (folded, around 2m. x 0.7 m. x 0.3 m.), easy to use (rapid manipulation thanks to the attachments avoiding tightening to the maximum, stretch cords in different colors according to their load), and not very dangerous (no risk of weight fall or crushing under a load thanks to the stretch cords, the user's articulations working progressively toward attaining an optimal effort under a favorable articulated angle and a maximum force at the end of the movement, which avoids muscular and tendon accidents).

As has been seen, the abdominal board according to the invention is reversible: used on the side of the abdominal board, alone, it allows a great variety of exercises with stretch cords, while coupled with the L-shaped support it allows not only a classic workout on the abbdominal board with the measure of difficulty according to whether it is in a more or less inclined position, from vertical to horizontal inclusively, but likewise a varied range of exercises with stretch cords thanks to low and high pulleys; used on the track side, the carriage allows a horizontal press workout, and the addition of the L-shaped support authorizes a workout on the inclined plane for traction or pushing exercises using body weight.

The L-shaped support is likewise reversible in the sense that it likewise allows use in two positions; in the normal position it serves as support to the abdominal board arranged vertically or inclined, itself in back or press position, but it can likewise be inversed (ladder placed on the ground), to be used with the detachable handles or detachable support bar for exercises using body weight. In a more summary form of utlization, the L-shaped support can be replaced by a simple ladder 30 such as that which has been described, intended to be firmly attached to a vertical support (wall, door, etc.).

One will also note the great appropriateness of the accessories for the different exercises, in particular, the handles which allow suspension and support exercises, the support bar, which serves for support exercises on the stomach, the hollow at the back of the knees, the thighs, the insteps (its attachment can be done at different levels, by compression of the springs, and blocking by releasing the ends which engage in the holes), the carriage which allows a workout seated, lying down, on the stomach, on the back, head up or head down, with a wide base intended to work with the carriage horizontal on the stringers of the L-shaped support and also to use the abdominal board in the horizontal position on one of its edges, wedged in its feet and held flat against the vertical ladder.

Another advantage is the possibility of choosing a range of exercises acting as an "assembly", which avoids manipulation and

transformation of the apparatus during a training session; one can then change the assemblies during following sessions.

The possible exercises are thus very varied, from around 30 for the basic apparatus with stretch cords, to almost 100 for the equipment in its most complete version.

By way of indication, some possible exercise are mentioned following:

First of all, as has been explained, the equipment according to the invention, even in a relatively summary version (abdominal board and stretch cords), allows the simultaneous workout of two persons, for example rowing and suspended (Fig. 32) or pulling from above (better known under the name of "pullover") and abdominals (Fig. 33).

Figures 34 to 36 show exercises effected with a basic apparatus consisting of the abdominal board in the normal position and some accessories, such as the stand 4 for Fig. 35. The exercises in Figs. 34 and 35 are more precisely adapted to the development of the pectoral muscles and the triceps; the exercise in Fig. 34 consists of a supine press realized by means of the push bar 190 (the user can slide a cushion under his shoulders for greater comfort), and that in Fig. 35 is an inclined press likewise by means of the push bar (a rug is slid under the back of the user). The exercise in Fig. 36 is adapted to the development of the deltoids and consists of a standing press likewise realized by means of the push bar 190 and flexible knotted cables hooked to the handles 16.

Figures 37 to 42 show exercises effected with the L-shaped support 3 in the normal position and some accessories, such as the stand 4 in Fig. 37. The exercise in Fig. 37 is more precisely adapted to the development of the pectoral muscles and the triceps, that in Fig. 38 consists of a rowing movement developing the deltoids, and those in Figs. 39 to 42 are prone or supine traction movements for the dorsals (especially the large dorsals) and the pectoral muscles.

Figure 43 shows an exercise effected with the abdominal board in the normal turned-up position, the L-shaped support 3 in the normal position, and some accessories such as the carriage 20, and consists of a rowing movement exerting the quadriceps, the large dorsal, the trapezius, and the posterior deltoid muscles.

Figure 44 shows an exercise effected lying on the back with the L-shaped support 3 in the normal position, the abdominal board arranged on edge transversally, and some accessories, exerting notably the large dorsals and the pectorals.

Figure 45 shows an exercise for the triceps, consisting of a succession of vertical pushing movements of the body with the L-shaped support 3 in the inverse position, the abdominal board in the normal position but arranged vertically against the stringers 31 of the L-shaped support or the back (detachable) of carriage 20, and some accessories among which the handle holder 36 takes the role of abdominal stand.

Figure 46 likewise shows an abdominal exercise but consisting of a chest lift, still with the L-shaped support 3 in the inverse position, and some accessories among which the support bar 35 furnished with a split foam cylinder 317.

Figure 47 shows an exercise effected with the L-shaped support 3 in the normal position, the abdominal board in the reverse position, the carriage 20, here the stand 4, and some accessories, among which the straps 38 mounted on their axle 37. This type of exercise, which particularly develops the pectorals and biceps, by using a constant force the length of the exercise, allows efficient completion of the workout with stretch cords (progressive force); the relevance of the conception of equipment allowing these exercises is that the use of body weight is precisely a soruce of economy and lightening of this equipment; one can effect an adjustment of effort in the function of incline of the plane, and in consequence it is possible to have workouts for men, women and children with the same apparatus without great manipulation, the effort being the action of the incline of the plane and not of a "charge"; in addition these exercises are pleasant and motivating for children, who very much enjoy working out on the carriage.

Lastly, Figure 48 shows an exercise with the L-shaped support 3 in the normal position, the abdominal board, and some accessories, consisting of a leg lift adapted to the development of the abdominal, large dorsal and pectoral muscles.

One notes that the equipment according to the invention allows a workout either in "constant force" (inclined plane with or without carriage, L-shaped support) or in "progressive force" (abdominal board with accessories and stetch cords), that is to say a great variety of movements capable of exercising practically all of the body muscles.

Of course, the invention is not limited to the form of realization represented above, and one can provide other forms, notably forms in which the stretch cords are replaced by springs, shock absorbers or other devices mounted on cables, without going out of its scope.

CLAIMS

1. Muscle development equipment consisting of at least an apparatus (1) (3) itself comprising at least a flat plate (10) (303, 304, 312, 313, 315) having two opposite sides and two stringers (11) (300, 31), to which this plate is interlocked in the area of its sides, equipment characterized in that the stringers (1), (300, 31), rectilinear, comprise, arranged opposite on the the two stringers and distributed along their length, interlocking means (110, 111, 112) (301, 310, 311) adapted to cooperate with interlocking detachable axles (183, 131, 142, 171, 211, 243) (302, 34, 35, 362), intended to interlock in a detachable manner the said apparatus (1) (3) and at least one other element (18) (13) (14) (17) (21) (24) (3) (1) (317) (36), so that the said equiment may be transformable into more complete equiment by the addition of said other element.

2. Equipment according to Claim 1 characterized in that the interlocking means distributed on the stringers comprise holes (110, 111) (301, 310, 311).

3. Equipment according to Claim 1 characterized in that the interlocking means distributed on the stringers comprise notches (112).

4. Equipment according to Claim 1, characterized in that it comprises a toe clip (18) consisting of a bar (180) interlocked with the stringers (11) tranversally to these and furnished with two axles (183) diametrically traversing the said bar and interlocking holes (110) realized in the said stringers.

5. Equipment according to Claim 1 characterized in that it comprises an apparatus (1) consisting of a flat plate (10) and two stringers (11) to which this plate is attached, as well as at least one holder for flexible elements (13) extending from one stringer to the other, interlocked with the said stringers and comprising to this end at least an interlocking axle (131) penetrating into interlocking holes (111) realized in the said stringers.

6. Equipment according to Claim 5 characterized in that it likewise comprises at least a pulley holder (14) extending from one stringer to the other, interlocked with the said stringers (11) and comprising to this end at least one interlocking axle (142) entering interlocking holes (111) realized in the said stringers, furnished with pulleys (143) to guide the said flexible elements (12).

7. Equipment according to Claim 5 characterized in that it likewise comprises at least a spreader (17) interlocked with the stringers and realized in the form of a U-shaped piece whose

stems (170) are furnished with interlocking axles (171) entering interlocking holes (111) realized in the said stringers.

8. Equipment according to Claim 1, characterized in that the stringers (11) present an attachment area of the said plate (10) which is adapted to support a user of the apparatus, and an area forming track when the said apparatus is reversed, and which comprises a carriage (20) furnished with wheels (201) adapted to be guided by the said tracks of the stringers of the said appartatus in reverse position.

9. Equipment according to Claim 8, characterized in that the carriage (20) comprises a shoulder strap holder (22) whose shoulder straps (221, 222) are intended for the support of the user's shoulders, interlocked in a detachable manner with the carriage (20) by means of lugs (224).

10. Equipment according to Claim 8, characterized in that the carriage (20) comprises a means,[7] flexible elements holder, in the form of an axle (202, 206) connecting two of its wheels (201).

11. Equipment according to Claim 1, characterized in that it comprises a footrest (24) interlocked with the stringers (11) and furnished to this end with two wings (240) carrying interlocking axles (243) entering interlocking holes (111) realized in the said stringers, and likewise furnished with a top (241) and a back (242) for the support of the user's feet.

12. Equipment according to Claims 1 and 8, characterized in that it comprises at least a stop (21) interlocked with a stringer (11) with a view to stopping the carriage (20) when it is shifting on the tracks and furnished to this end with an interlocking axle (211) entering the interlocking holes (111) ralized in the said stringers.

13. Equipment according to Claim 1, characterized in that it comprises an apparatus consisting of a ladder (30) and two stringers (31) connected by at least a flat plate (313), and in which the ladder and the two stringers are articulated by a transversal pivot bar (32) and connected by abutments (33).

14. Equipment according to Claim 13, characterized in that it comprises a foam support cylinder (317) interlockable with the said strngers (31) and with the said abutments (33) and comprising to this end a telescopic interlocking axle (35) furnished with interlocking fingers entering interlocking holes (310, 311, 330).

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[7] Word(s) appear to be missing.

15. Equipment according to Claim 13, characterized in that it comprises a handle holder (36) forming a stand interlockable with the said stringers (31) and with the said abutments (33) and comprising to this end two wings furnished with interlocking axles (362) entering the interlocking holes (310, 330) of the said stringers and the said abutments.

16. Equipment according to Claim 1, characterized in that it comprises a first apparatus comprising a plate (10) and two stringers (11) to which this plate is attached, and a second apparatus comprising two stringers (300) forming a ladder (30), and in which the two pieces of apparatus comprise interlocking means (112, 301) adapted to cooperate with detachable interlocking axles (34, 302) from one to the other so that the first apparatus may be interlockable with the second in various inclined positions from a horizontal position to a vertical position, inclusive.

17. Equipment according to Claim 1, characterized in that it comprises a first apparatus comprises a plate (10) and two stringers (11) to which this plate is attached, and a second apparatus comprising two stringers (300) forming a ladder (30) and two other stringers (31) as well as at least a plate (303, 304, 312, 313, 315) connecting the stringers by pairs, and in which the two pieces of apparatus comprise interlocking means (112, 301) adapted to cooperate with detachable interlocking axles (34, 302) from one to the other so that the first apparatus may be interlockable with the second in various inclined positions from a horizontal position to a vertical position, inclusive.

18. Equipment according to Claim 16 or 17, characterized in that it comprises a strap support axle (37), furnished at its ends with slots (370) for the insertion of the stringers (300) of the second apparatus.

19. Equipment according to Claim 15, characterized in that it comprises a folding stand (40) interlockable with the said apparatus and comprising to this end an interlocking axle (40) adapted to cooperate with interlocking means (112) provided in the stringers (11) of the first apparatus.

20. Equipment according to Claims 1 and 8, characterized in that the carriage comprises axles (202, 206) of different widths carrying wheels (201) 205) presenting a different wheel base.

21. Equipment according to Claim 19, characterized in that it comprises an anti-derailment device (5) furnished with two stringers (52) adapted to be arranged very lightly above the wheels (205) presenting the widest separation, and of two horizontal stems (54) connected to the said stringers (52), as well as two small bars (51) to pinch the stringers (11) connected

by the support plate (10) in two areas, each time between a horizontal stem (54) and a small bar (51).